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EXAMINER

AFSHAR, KAMRAN

ART UNIT PAPER NUMBER

2681

DATE MAILED: 06/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/624,812

Applicant(s)

MARINIER, PAUL

Examiner

Kamran Afshar, 571-272-7796

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 February 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-5,7-13 and 18-20 is/are rejected.
- 7) ☒ Claim(s) 2,17 and 614 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

3. Claim 12 is rejected under 35 U.S.C. 102(e) as being anticipated by Cai (EP 1 328 080 A1).

With respect to claim 12, Cai discloses a method for increasing the uplink and downlink capacity (See e.g. increasing number of subscriber) in a wireless system (See e.g. Co. 2, Lines 25-27), using a single time slot and frequency band (See e.g. single timeslot and single carrier, Co. 2, Lines 25-27) for both the uplink and downlink transmissions (See e.g. time-slot, uplink and downlink use same frequency and a same time-slot, band, Co. 4, Line 55 - Co. 5, Line 4).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

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the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 1, 3-5, 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blount (U.S. Pub. 2003/0031279 A1) in view of Cai (EP 1 328 080 A1).

With respect to claims 1, 5, 13, Blount discloses a self-interference canceller in an adaptive antenna system (See e.g. 208 of Fig. 2) to reduce the radio frequency self-interference created by receiving and transmitting signals (See e.g. 210, 204, 208 of Fig. 2, & Page 2, Paragraphs [0019]-[0021]) and transmit section and receiver section (See e.g. 204, 210 of Fig. 2). However, Blount did not teach receiving a signal in a time slot in a frequency band; transmitting a signal in the same time slot and the same frequency band. In the same field of endeavor, Cai discloses receiving a signal in a time slot in a frequency band; transmitting a signal in the same time slot and the same frequency band (See e.g. Co. 4 – Co. 5, Paragraph [0018]). Therefore, it would have been obvious to one ordinary skill in the art at the time of the invention to provide above teaching of Cai to Blount so that to provide a method for increasing cellular system capacity in both direction i.e. uplink and downlink using the same timeslot and the same frequency band. The motivation is, therefor, the subscriber number existing simultaneously at a single time-slot and single carrier can be increased (See e.g. Cai, Co. 2, Paragraph [0005]).

Regarding claim 3, Blount discloses separate antennas for receiving and transmitting (See e.g. 204, 210).

Regarding claim 4, Blount discloses using an adaptive antenna (See e.g. Page 3, Paragraph [0024]).

6. Claim 5, 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kenworthy (U.S. Patent 5,691,978) in view of Cai (EP 1 328 080 A1).

With respect to claim 5, Kenworthy discloses a receiver section inherently receiving a signal (See e.g. 20 of Fig. 1), transmitter section inherently transmitting a signal; and an adaptive self-interference canceller connected between receiver section and transmitter section (See e.g. 27, 20, 10, 19 of Fig. 1) for canceller reducing radio frequency self-interference (See e.g. Co. Co. 2, Lines18-64). However,

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Kenworthy did not teach the receiver receiving a signal and the transmitter transmitting a signal in the same time slot and the same frequency band. In the same field of endeavor, Cai discloses the receiver receiving a signal and the transmitter transmitting a signal in the same time slot and the same frequency band. (See e.g. Co. 4 – Co. 5, Paragraph [0018]). Therefore, it would have been obvious to one ordinary skill in the art at the time of the invention to provide above teaching of Cai to Blount so that to provide a method for increasing cellular system capacity in both direction i.e. uplink and downlink using the same timeslot and the same frequency band. The motivation is, therefor, the subscriber number existing simultaneously at a single time-slot and a single carrier can be increased (See e.g. Cai, Co. 2, Paragraph [0005]).

Regarding claims 7-9, Kenworthy discloses an adaptive antenna and / or a single antenna for receiving and transmitting signals, which inherently antenna array for receiving and transmitting signals (See e.g. 17 of Figs 1, 4-6).

Regarding claims 10-11, Kenworthy discloses the antenna comprises a first antenna for receiving signals and a second antenna for transmitting signals and / or the antenna array for receiving signals and a second antenna array for transmitting signals (See e.g. 17, 21, of Figs. 1, 5).

7. Claims 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ide (U.S. Patent 6, 556, 845 B1) in view of Cai (EP 1 328 080 A1).

With respect to claims 18, 19, Ide discloses a method for increasing the uplink (See e.g. to improve an increase in the channel capacity of a reverse link, Co. 1, Lines 48-52) and downlink capacity in a wireless system (See e.g. to improve the increase in the channel capacity of the forward link, Co. 1, Lines 58-61), using an adaptive antenna in a base station for a single cell (See e.g. the adaptive array antenna is mounted on the base station apparatus, Co. 1, Lines 48-52), whereby a mobile unit operating in that cell (See e.g. mobile terminals 1-5 of Fig. 1) and / or to reduce the interference (See e.g. Co. 1, Lines 58-61). However, Ide did not teach using a single time slot while a mobile unit in a neighboring cell can also use the same time slot. In an analogous, Cai, discloses a CDMA system and a time slot structure. Further teaches using the timeslot structure in the uplink and downlink uses the same

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frequency band and the same time slot for multiple subscribers can transmit and receive simultaneously (See e.g. Co. 4, Line 54 – Co. 5, Line 4). Therefore, it would have been obvious to one ordinary skill in the art at the time of the invention to provide above teaching of Cai to Ide using a single time slot while a mobile unit in a neighboring cell and / or in the system can also use the same time slot. The motivation comes from Cai for providing a method for increasing cellular system capacity in both direction i.e. uplink and downlink (See e.g. therefor, the subscriber number existing simultaneously at a single time-slot and single carrier can be increased, Co. 2, Paragraph [0005]) and / or reducing interference in the system (See e.g. Co. 2, Lines 21-24, Co. 2, Lines 54-58).

Regarding claim 19, Ide discloses using adaptive antenna and the base station (See e.g. Page 2, Paragraphs [0033]-[0034]) and Cai discloses the interference is reduced (See e.g. Co. 2, Lines 21-24, and Co. 2, Lines 54-58) using the same timeslot throughout the system (See e.g. Co. 4, Line 54 – Co. 5, Line 4).

Allowable Subject Matter

8. Claims 2, 6, 14-17 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

With respect to claim 2, the prior art of record fails to disclose or render obvious that the circulator acts to reduce radio frequency self-interference by isolating the signal flow between the antenna and the receiver or between the transmitter and the antenna.

With respect to claim 6, the prior art of record fails to disclose or render obvious that further comprising a circulator connected between the antenna, the receiver section, and the transmitter section.

With respect to claims 14-15, the prior art of record fails to disclose or render obvious that the method further comprising the step of using a circulator and an adaptive antenna in combination for reducing the self-interference.

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With respect to claims 16-17, the prior art of record fails to disclose or render obvious that the canceller acts to reduce baseband self-interference by subtracting the self-interference from the rest of a received signal; and using a circulator, the circulator being connected at the junction of a transmitter output, an antenna, and a receiver input, whereby the circulator reduces radio frequency self-interference.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a) Ide et al. (U.S. Pub. No.: 2003/0148744 A1), which discloses Directivity control type communication apparatus and adaptive array antenna apparatus.

Any inquiry concerning this communication or earlier communication from the examiner should be directed to Kamran Afshar whose telephone number is (571) 272-7796. The examiner can be reached on Monday-Friday.

If attempts to reach the examiner by the telephone are unsuccessful, the examiner's supervisor, **Emmanuel Moise** can be reached @ (571) 272-3865. The fax number for the organization where this application or proceeding is assigned is (703) 872-9306 for all communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Kamran Afshar


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